<Personal> Retirement

Retirement

Professor OKA, Atsuhiro
Division of Biochemistry
— Molecular Biology —

On March 31st, 2008, Dr. Atsuhiro Oka retired from Kyoto University after 33 years of service and was honored with the title of Professor Emeritus of Kyoto University. Dr. Oka was born in Hyogo Prefecture on March 14th, 1945. He graduated from Department of Biology, Faculty of Science, Osaka University in 1967 and subsequently entered Graduate School of Science, Osaka University, where he studied molecular genetics of *Escherichia coli* phages under the supervision of late Professor Haruo Ozeki. In 1972, he was granted a doctoral degree with a thesis entitled "Molecular mechanisms of genetic recombination in coliphage lambda". After completing the doctoral program, he joined Sumitomo Chemical Co., Ltd. in Takarazuka to study agricultural chemicals. On leave from the company from 1973 to 1974, he returned to the basic biology field and studied on the replication of the *E. coli* plasmid ColE1 under Professor Joseph Inselburg at Department of Microbiology, Dartmouth Medical School in Hanover, New Hampshire as a postdoctoral fellow. In 1975, he was appointed Assistant Professor of Institute for Chemical Research, Kyoto University, and promoted to Associate Professor in 1984, and to Professor in 1994, directing the Laboratory of Molecular Biology. Meanwhile, from 1996 to 1998, he served concurrently as the head of Research Facility of Nucleic Acids.

During his academic carrier, Dr. Oka has devoted himself to molecular biology, focusing on structures and functions of genes and genetic elements. He started his study from bacterial molecular genetics focusing on genetic recombination and DNA replication. He determined functional structures of many genetic elements including the entire structure of transposable element Tn*903* and the structure required for the replication of the plasmid ColE1. He also defined a small region of 245-base-pair length as the replication origin of the *E. coli* chromosomal. These early works in his study have contributed to the progress of not only basic biology but also recombinant DNA techniques. Notably, the kanamycin resistance gene that Tn*903* contains is known as one of standard marker genes in both prokaryotic and eukaryotic systems today.

In late 1980's, he extended the field of his study to plant pathogenic bacteria and investigated the structure and function of the Ri plasmid pRiA4b, which mediates the hairy root formation on the plants surface by *Agrobacterium rhizogenes*. He determined the entire structure of the Ri plasmid, defined the region essential for the plasmid replication, and clarified the molecular mechanism of the plant-bacteria signal transduction through the His-Asp phosphorelay system composed of VirA and VirG.

In 1990's, he further extended his field of studies to plant molecular biology, focusing on regulatory mechanisms for plant morphogenesis and responses to environmental stimuli. He identified genes encoding proteins with a wide variety of regulatory functions, including protein kinases, protein phosphatases, transcription factors, phospholipid metabolizing enzymes. Among them, *Arabidopsis thaliana* ARR1 and ARR2 were identified as the first transcription factor-type response regulators in plants, and revealed to be the intracellular signal transducers of cytokinins. This finding lead to the first comprehensive understanding of phytohormone signaling at the molecular level, connecting the cytokinin signal pathway to the expression of cytokinin responsive genes. Throughout his carrier, Dr. Oka has frequently published his work in high profiled international journals that include Nature and Science.

His contribution to Kyoto University and the Institute through his scientific and educational activities is hereby greatly acknowledged. His strong motivation towards revealing the truth in nature and his warm and sincere personality will remain deep in the hearts of those who have known him.

Retirement

Professor HORII, Fumitaka
Division of Environmental Chemistry
— Molecular Materials Chemistry —

On 31 March, 2008, Dr. Fumitaka Horii retired from Kyoto University after 31 years of service and he was honoured with the title of Professor Emeritus of Kyoto University.

Dr. Horii was born in Shiga on 24 June, 1944. He graduated from the Department of Polymer Chemistry, Faculty of Engineering, Kyoto University, in 1967 under the supervision of the late Professor Ichiro Sakurada. He studied the structure and properties of graft copolymers at the Graduate School of Engineering under the supervision of Professor Yoshito Ikada and he was awarded the doctoral degree for the thesis entitled "Characterization of Graft Copolymers and Their Emulsifying Behavior" in 1975. In 1977, he held the post of Research Associate at the Institute for Chemical Research (ICR), Kyoto University; he was appointed Assistant Professor in 1981, Associate Professor in 1987, and Full Professor in 1992 at ICR. As Full Professor, he directed the Laboratory of Molecular Dynamic Characteristics (presently re-named as Laboratory of Molecular Materials Chemistry).

Throughout his academic career, Dr. Horii devoted himself mainly to studies on the structure, structure formation and structure control of polymers, including native cellulose, and made a number of notable findings. His main achievements are as follows. (1) By introducing a high-resolution solid-state NMR spectrometer at the initial stage of the progress, he developed new methods to characterise the solid structure for many crystalline and liquid crystalline polymers. In particular, he contributed to the elucidation of the crystalline-amorphous interfacial component and the oriented noncrystalline chains in polymer materials. He also characterised intra- and inter-molecular hydrogen bondings for different poly(vinyl alcohol) materials on the basis of statistical and quantum chemistry calculations. (2) He contributed to further developments in the solid-state NMR characterisation of the dynamics and local structure of noncrystalline polymers on different temporal or spatial scales. (3) He developed a new solid-state NMR method for analysing the surface structure of polymer materials as a function of the distance (in Å) from the surface. He expects to combine dynamic nuclear polarization (DNP) with this method for increasing the sensitivity by 100–1000 times. (4) He has made pioneering contributions to the establishment of the composite crystal model for native cellulose, which was assumed to comprise two allomorphs, cellulose I_α and I_β, by the discoveries of a new crystal transformation for native cellulose and the wide distribution in the fractions of cellulose I_α and I_β in nature. He also clarified the liquid-crystal-like structure of the basic assembly for bacterial cellulose and proposed a structural model for the formation of the hierarchical structure, including the crystallisation process.

These notable findings of Dr. Horii were published in over 260 scientific publications. He was presented with the Award of the Society of Fiber Science and Technology, Japan, in 1992 and the Anselme Payen Award by the Cellulose and Renewable Materials Division of American Chemical Society in 2007.

Dr. Horii has contributed to various scientific societies. He has been an associate editor with international journals including *Polymer Journal* and *Cellulose*. He has served as President and Vice-President of the Cellulose Society, Japan, and as Representative of the Society of Solid-State NMR for Materials.

He has also greatly contributed to the establishment of the organisation for safety and health in Uji campus as General Safety and Health Manager and as Director of the Center for Environment and Safety Managements in Uji campus after Kyoto University changed from a national university to a national university corporation.

Dr. Horii's contribution to Kyoto University through his scientific, educational and administrative activities is gratefully acknowledged.